Claims

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1. A heat exchange assembly including:-

an internal passageway formed between a pair of spaced substantially parallel internal sheets, and

respective external passageways formed between each said internal sheet and a respective external sheet spaced from and substantially parallel to a respective internal sheet;

said pair of internal sheets at the ends of said internal passageway extending beyond said external sheets at the ends of said external passageways thereby facilitating fusion welding to said internal sheets at the ends of said internal passageway.

2. A heat exchange assembly as claimed in claim 1, and including:-

spacing ribs between said sheets and forming with said sheets a plurality of fluid conduits within said internal passageway and a plurality of external conduits within said external passageways.

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3. A heat exchange assembly as claimed in claim 2, and including:-

fluid inlet means at one end of said internal passageway or said external passageways for the inflow of fluid in the heat exchange assembly, and

fluid outlet means at the other end of said internal passageway or said external passageways for the outflow of fluid from the heat exchange assembly.

4. A heat exchange assembly as claimed in claim 3, and including:-

gas inlet means at one end of the other of said internal passageway or said external passageways for the inflow of gas to the heat exchange assembly, and

gas outlet means at the other end of the other of

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said internal passageway or said external passageways for the outflow of gas from the heat exchange assembly;

whereby said internal passageway or said external passageways is/are adapted to receive or contain a gas for effecting heat exchange with a fluid in the other of said internal passageway or said external passageways.

5. A heat exchange assembly as claimed in claim 3, said assembly constituting a panel sealed at the sides thereof by said spacing ribs and open at the ends thereof to provide access to said conduits which extend from one end of the panel to the other end thereof.

6. A heat exchange assembly as claimed in claim 5, and including an inlet manifold and an outlet manifold at respective ends of said panel.

7. A heat exchange assembly as claimed in claim 6, wherein said inlet manifold and said outlet manifold include said fluid inlet means and said fluid outlet means respectively.

8. A heat exchange assembly as claimed in claim 7, wherein said inlet manifold and said outlet manifold include said gas inlet means and said gas outlet means respectively.

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9. A heat exchange assembly as claimed in claim 3, and including:-

pressure relief means for relieving the pressure in said fluid passageway generated by heating fluid therein.

10. A heat exchange assembly as claimed in claim 9,

wherein said pressure relief means is a riser positioned in said fluid inlet and/or fluid outlet means.

11. A heat exchange assembly including:-

an internal passageway formed between a pair of spaced substantially parallel internal sheets, and

respective external passageways formed between each said internal sheet and a respective external sheet spaced from and substantially parallel to a respective internal sheet;

fluid inlet means at one end of said internal passageway or said external passageways for the inflow of fluid in the heat exchange assembly;

fluid outlet means at the other end of said internal passageway or said external passageways for the outflow of fluid from the heat exchange assembly;

gas inlet means at one end of the other of said internal passageway or said external passageways for the inflow of gas to the heat exchange assembly, and

gas outlet means at the other end of the other of said internal passageway or said external passageways for the outflow of gas from the heat exchange assembly;

whereby said internal passageway or said external passageways is/are adapted to receive or contain a gas for effecting heat exchange with a fluid in the other of said internal passageway or said external passageways.

12. A roofing panel incorporating a heat exchange assembly, said roofing panel including:-

an internal fluid passageway formed between a pair of spaced substantially parallel internal sheets for the passage therethrough of a fluid;

respective external passageways formed between each said internal sheet and a respective external

sheet spaced from and substantially parallel to a respective internal sheet, and

spacing ribs between said sheets and forming with said sheets a plurality of fluid conduits within said fluid passageway and a plurality of external conduits within said external passageways;

said pair of internal sheets at the ends of said internal passageway extending beyond said external sheets at the ends of said external passageways thereby facilitating fusion welding to said internal sheets at the ends of said internal passageway, said panel being sealed at the sides thereof by said spacing ribs and being open at the ends thereof to provide access to said conduits which extend from one end of the panel to the other end thereof.

13. A manifold for connection to a panel as claimed in claim 12, said manifold including:-

fluid communication means for the inflow or outflow of fluid to or from the fluid conduits, and

gas communication means for the inflow or outflow of gas to or from the external conduits.

14. A manifold as claimed in claim 13, and including:-

receiving means for receiving the internal sheets and the external sheets whereby said fluid communication means and said gas communication means are sealingly connected to the fluid passageway and the external passageways respectively.

15. A manifold as claimed in claim 13, wherein said manifold is an extrusion and said fluid communication means and said gas communication means are channels in said extrusion.

16. A heat exchange panel including:-

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an internal fluid passageway formed between a pair of spaced substantially parallel internal sheets for the passage therethrough of a fluid;

respective external passageways formed between each said internal sheet and a respective external sheet spaced from and substantially parallel to a respective internal sheet;

spacing ribs between said sheets and forming with said sheets a plurality of fluid conduits within said fluid passageway and a plurality of external conduits within said external passageways, and

manifold means including fluid communication means for the inflow or outflow of fluid to or from the fluid conduits, and gas communication means for the inflow or outflow of gas to or from the external conduits;

wherein said panel is sealed at the sides thereof by said spacing ribs and is open at the ends thereof to provide access to said conduits which extend from one end of the panel to the other end thereof.